MET 352 Engineering Design Department of Materials and Metallurgical Engineering South Dakota School of Mines and Technology

Ex Post Facto Assignment 9: Engineering Economics Submit digitally

- 1. What is the difference in a car payment for a \$35,000 car financed for 48 months at 8% and the amount of money you would need to invest every month starting at the end of the first month (just like a car payment) to have \$35,000 at the end of four years? (Use 6/1200 for the monthly interest rate.)
- 2. If for the above problem, what would the monthly payment be for 36 months if the buyer wants to pay off the loan after 36 months with a \$10,000 final payment (in addition to the regular end-of-the-month payment?
- 3. You currently have \$20,000 in your investment account. How many years would you need to invest \$2,000 per year starting at the end of this year to be able to withdraw \$5,000 per year from the accumulated investment starting a year after your last deposit? Assume 8% annual rate of return.
- 4. Which of the two alternatives has the minimum annual cost?
 A: Keeping your old car (or buying another on) that is worth \$6,000 and costs \$2,400 to operate annually.
 B: Buying a new used car for \$16,000 that costs \$1,400 to operate annually.

The old car will have a salvage value of \$2,000 at the end of four years while the new used car will have a salvage value of \$7,000 at the end of four three years. Assume the time value of your money is 8%.

5. How long will it take to recover the cost of a 12M investment that returns 2M annually if i = 12%?

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8%

n	F/P	F/A	P/A	P/F	A/F	A/P
1	1.080	1.000	0.926	0.926	1.000	1.080
2	1.166	2.080	1.783	0.857	0.481	0.561
3	1.260	3.246	2.577	0.794	0.308	0.388
4	1.360	4.506	3.312	0.735	0.222	0.302
5	1.469	5.867	3.993	0.681	0.170	0.250
6	1.587	7.336	4.623	0.630	0.136	0.216
7	1.714	8.923	5.206	0.583	0.112	0.192
8	1.851	10.637	5.747	0.540	0.094	0.174
9	1.999	12.488	6.247	0.500	0.080	0.160
10	2.159	14.487	6.710	0.463	0.069	0.149
11	2.332	16.645	7.139	0.429	0.060	0.140
12	2.518	18.977	7.536	0.397	0.053	0.133
13	2.720	21.495	7.904	0.368	0.047	0.127
14	2.937	24.215	8.244	0.340	0.041	0.121
15	3.172	27.152	8.559	0.315	0.037	0.117
16	3.426	30.324	8.851	0.292	0.033	0.113
17	3.700	33.750	9.122	0.270	0.030	0.110
18	3.996	37.450	9.372	0.250	0.027	0.107
19	4.316	41.446	9.604	0.232	0.024	0.104
20	4.661	45.762	9.818	0.215	0.022	0.102